PD-35x Series

PD-350
PD-351
PD-352

Digital Multimeter

0 MI2107

PROMAX

SAFETY NOTES

Read the user's manual before using the equipment, mainly "**SAFETY RULES**" paragraph.

The symbol on the equipment means "**SEE USER'S MANUAL**". In this manual may also appear as a Caution or Warning symbol.

WARNING AND CAUTION statements may appear in this manual to avoid injury hazard or damage to this product or other property.

USER'S MANUAL VERSION

Version	Date
1.0	November 2015

SAFETY RULES ⚠

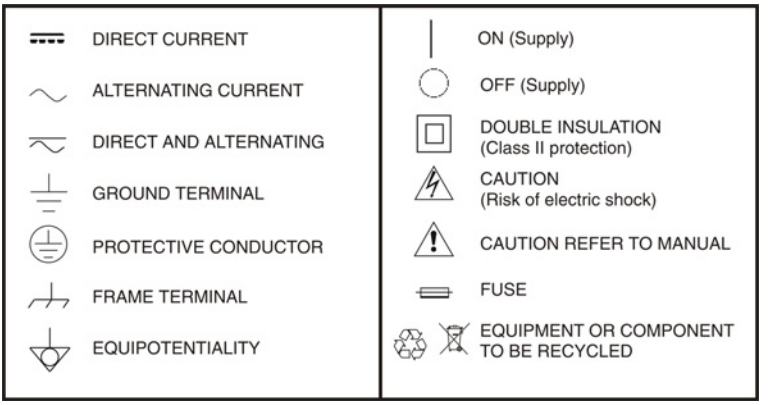
* **The safety could not be assured if the instructions for use are not closely followed.**
* This equipment can be used in **Overvoltage Category III** installations and **Pollution Degree 2 environments**.
* When using some of the following accessories use only the **specified** ones to ensure safety:

  One pair test leads
* Review the state of the test ends before its use.
* Observe all **specified ratings** of measurement.
* Remember that voltages higher than **60 V DC** or **33 V AC rms** are dangereus.
* Use this instrument under the **specified environmental conditions**.
* The user is only authorised to:

  Battery replacement

  Fuses
* On the Maintenance section proper instructions are given.
* Any other change on the equipment should be carried out by qualified personnel.
* Follow the **cleaning conditions** described in the Maintenance paragraph.

* Symbols related with safety:



Descriptive Examples of Over-Voltage Categories

Cat I Low voltage installations isolated from the mains.

Cat II Portable domestic installations.

Cat III Fixed domestic installations.

Cat IV Industrial installations.

TABLE OF CONTENTS

1 Introduction 1
1.1 Features 1
2 Setting Up 2
2.1 General Inspection 2
2.2 Install the Batteries 3
2.3 Adjusting the Tilt Stand 4
2.4 Power On 4
2.5 Sleep Mode 4
2.6 Backlight Control 5
2.7 Selecting the Range 5
2.8 Description 6
3 Measurements 12
3.1 Measuring AC or DC Voltage 12
3.2 Measuring Resistance 13
3.3 Testing Diodes 13
3.4 Testing for Continuity 14
3.5 Measuring Capacitance 15
3.6 Measuring Frequency 16
3.7 Measuring Transistor 16
3.8 Measuring Temperature 17
3.9 Measuring DC or AC Current 17
4 Tools 20
4.1 Data Hold Mode 20
4.2 Capturing Max. and Min. Values 20
4.3 Making Relative Measurements 21
4.4 Buzzer Feature 21
5 Bluetooth Function (PD-351 and PD-352) 23
5.1 System Requirements of Mobile Devices 23
5.2 Install the application software 23
5.3 How to Connect 24
5.4 User Interface 27
6 Operations 29
7 Technical Specifications 33
8 Maintenance 37
8.1 Cleaning the multimeter 37
8.2 Replacing the battery 37
8.3 Fuse replacement 38

Digital Multimeter
PD-35x Series

1 Introduction

1.1 Features

- Data transferring via Bluetooth, interacting with mobile device to read measurements, analyze via special chart mode, remote control, voice-out feature; voice warning supported, which enhances measurement safety (only in PD-351 and PD-352).
- $3\frac{5}{6}$ digit reading, achieving higher measurement accuracy than $3\frac{1}{2}$ or $3\frac{3}{4}$ digit counterparts.
- Larger display, easier data-reading; analog bar graph is displayed synchronously.
- Connect simultaneously with two multimeters supported via mobile APP.
- Temperature measuring function.
- Backlit-powered screen, more suitable for dark measurement environment.
- Smart power-off function, extending battery life.
- Thin-tipped test lead (optional) to measure the pins of small package device.
- True RMS value available (only in PD-352 and PD-350).

2 Setting Up

2.1 General Inspection

After you get a new multimeter, make a check on the instrument according to the following steps:

1. **Check whether there is any damage caused by Transportation.**
   If it is found that the packaging carton or the foamed plastic protection cushion has suffered serious damage, do not throw it away first till the complete device and its accessories succeed in the electrical and mechanical property tests.

2. **Check the Accessories.**
   The supplied accessories have been already described in this Manual. You can check whether there is any loss of accessories with reference to this description. If it is found that there is any accessory lost or damaged, please get in touch with the distributor of PROMAX responsible for this service or the PROMAX local offices.

3. **Check the Complete Instrument.**
   If it is found that there is damage to the appearance of the instrument, or the instrument can not work normally, or fails in the performance test, please get in touch with the PROMAX distributor responsible for this business or the PROMAX local offices. If there is damage to the instrument caused by the transportation, please keep the package.

2.2 Install the Batteries

The multimeter is powered by two 1.5 V AA alkaline batteries.

WARNING: To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the low battery indicator appears.

Before replacing the battery, turn off the meter, disconnect test leads and any connectors from any circuit under test, remove test leads from the input terminals. Use only the specified battery type.

Use the following procedure to install the batteries.

1. Ensure that the rotary switch is at the OFF position. Remove test leads and any connectors from the input terminals.
2. Lift the tilt stand and loosen the screws with a suitable Phillips screwdriver and remove the battery cover.
3. Observe the battery polarity indicated inside the battery compartment, Insert the batteries.
4. Place the battery cover back in its original position and tighten the screws.

CAUTION: To avoid instruments being damage from battery leakage, always remove the batteries and store them separately if the multimeter is not going to be used for a long period.

2.3 Adjusting the Tilt Stand

Pull the tilt- stand outward to its maximum reach (about 85 ° to the meter body).

2.4 Power On

1. To power ON the multimeter, turn the rotary switch to any other position except OFF.
2. To power OFF the multimeter, turn the rotary switch to the OFF position.

2.5 Sleep Mode

The multimeter automatically enters the sleep mode if the rotary switch is not moved or a key is not pressed for 15 minutes. (When the Bluetooth is activated, this function is disabled).

Pressing any key will turn the multimeter back to operation mode from the sleep mode.

One minute before auto power-off, the buzzer will sound "beep" five times to warn. Before it is shut off, the buzzer will sound a long "beep" then shut off.

NOTE: In sleep mode, the multimeter will still consume a little power. If the multimeter is not going to be used for a long period, the power should be turned off.

2.6 Backlight Control

1. To view the display in low-light conditions, you can activate the LCD backlight by pressing for more than 2 seconds.

2. To turn off the backlight, press for more than 2 seconds.

The backlight will last for 10 seconds.

2.7 Selecting the Range

- Auto ranging is set as default when the meter is powered on, **AUTO** is displayed.
- When auto ranging is enabled, press Range to enter the manual range mode.
- In manual range, each additional press of Range sets the multimeter to the next higher range, unless it is already in the highest range, at which point the range switches to the lowest range.
- When manual range is enabled, press Range for more than 2 seconds to enter the auto ranging mode.

Note: Manual range is not available when measuring capacitance.

2.8 Description

Front panel

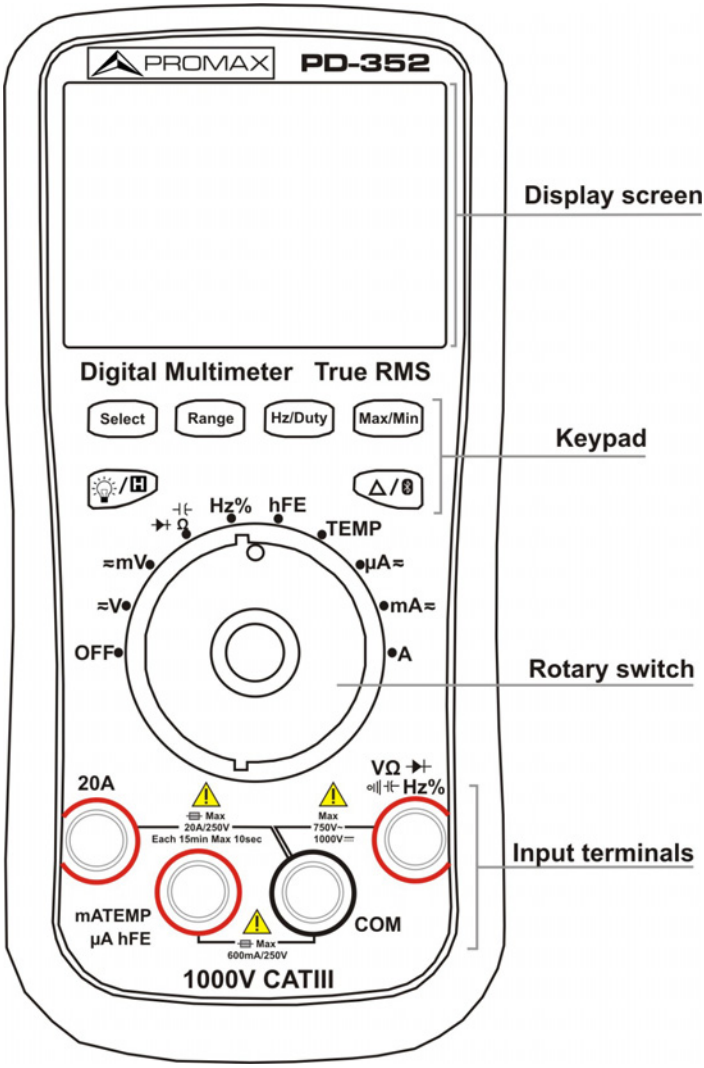


Figure 1. Front Pannel

Rotary switch

OFF	Power off.
≂V	DC or AC voltage measurement.
≂mV	DC or AC voltage measurement (up to 600 millivolts).
	Continuity test, Capacitance measurement, Diode test, Resistance measurement.
Hz%	Frequency measurement.
hFE	Transistor measurement.
TEMP	Temperature measurement.
µA≂	DC or AC current measurement (up to 600 microamperes).
mA≂	DC or AC current measurement (up to 600 milliamperes).
A≂	DC or AC current measurement.

Keypad

Select	Select function: ■ Select DC or AC ■ Select °C or °F during temperature measurements ■ Select Resistance / Diode / Continuity / Capacitance
Range	Auto/Manual range.

Select frequency/duty cycle.

Capturing Max. and Min. Values.

Backlight, Data Hold.

Relative Measurements, Bluetooth (PD-352).

Display screen

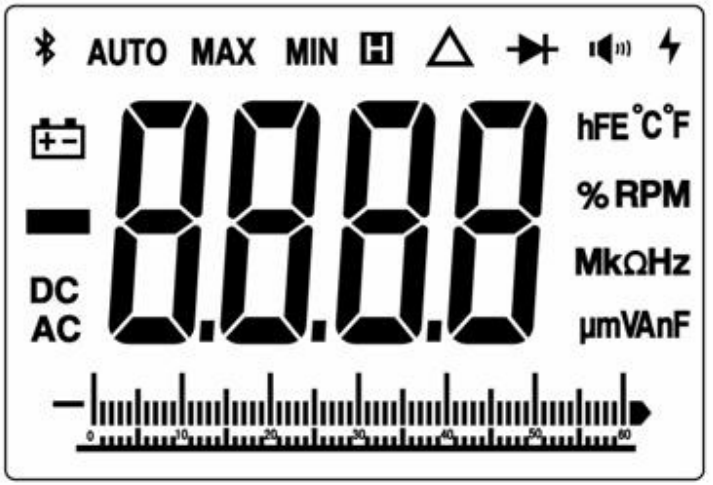
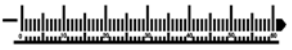


Figure 2. Display screen.

	Bluetooth enabled.
AUTO	Auto range.
MAX	Maximum reading.
MIN	Minimum reading.

H	Data hold enabled.
△	Relative enabled.
▶|	Diode test selected.
🔊	Continuity test selected.
±	Battery is low.
DC	DC.
AC	AC.
-8.8.8.8	Measurement display ("OL" is short for overload, indicates the reading exceeds the display range).
hFE °C °F % RPM MkΩHz µmVAnF	Measuring units.
	Analog bar graph.

- **Measurement units**

Sign	Description	
M	Mega	1E+06 (1000000)
k	kilo	1E+03 (1000)
m	milli	1E–03 (0.001)
µ	micro	1E–06 (0.000001)
n	nano	1E–09 (0.000000001)

Sign	Description	Measurement type
°C	Degree Celsius	Temperature
°F	Degree Fahrenheit	
V	Voltage	Voltage
A	Ampere	Current
Ω	Ohm	Resistance
Hz	Hertz	Frequency
%	Percent,	Duty cycle
F	Farad	Capacitance
hFE	Current Amplification Factor	Transistor

Input terminals

The terminal connections for the different measurement functions of the multimeter are described in the table below.

WARNING: Before starting any measurement, observe the rotary switch position of the multimeter, and then connect the test leads to the correct terminals.

CAUTION: To avoid damaging the multimeter, do not exceed the rated input limit.

Rotary switch position	Input terminals		Overload protection
≈V	VΩ⊣◀ •))) ⊣⊢ Hz%	COM	750 VAC/1000 VDC
≈mV	VΩ⊣◀ •))) ⊣⊢ Hz%	COM	250 VDC or Equivalent voltage RMS
•))) ⊣⊢ ◀⊣ Ω	VΩ⊣◀ •))) ⊣⊢ Hz%	COM	
Hz%	VΩ⊣◀ •))) ⊣⊢ Hz%	COM	250 VAC or Equivalent voltage RMS
TEMP	mATEMP µA hFE	COM	1 A / 250 V, fast-acting fuse
µA≈	mATEMP µA hFE	COM	
mA≈	mATEMP µA hFE	COM	
A≈	20A	COM	20 A / 250 V, fast-acting fuse

3 Measurements

3.1 Measuring AC or DC Voltage

WARNING: Do not measure any voltage of over 1000 VDC or 750 VAC rms to avoid instrument damage or electric shock.Do not apply more than 1000 VDC or 750 VAC rms between the common terminal and the earth ground to avoid instrument damage or electric shock.

This multimeter displays DC voltage values as well as their polarity. Negative DC voltages will display a negative sign on the left of the display.

DC voltage ranges are 60.00 mV, 600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V.

AC voltage ranges are 60.00 mV, 600.0 mV, 6.000 V, 60.00 V, 600.0 V, 750 V.

1. Rotate the rotary switch to ≂V or ≂mV. Default is DC measurement mode, **DC** will be displayed. Press Select to switch into AC measurement mode, **AC** will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the VΩ→+ ◦))) ⊣⊢ Hz% terminal.
3. Probe the test points and read the display. Press Range to enable and cycle through the manual ranges.

3.2 Measuring Resistance

CAUTION: To avoid possible damage to your multimeter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before measuring resistance.

Resistance ranges are 600.0 Ω, 6.000 kΩ, 60.00 kΩ, 600.0 kΩ, 6.000 MΩ, and 60.00 MΩ.

1. Rotate the rotary switch to .
2. Connect the black test lead to the **COM** terminal and the red test lead to the terminal.
3. Probe the test points and read the display. Press Range to enable and cycle through the manual ranges.

3.3 Testing Diodes

CAUTION: To avoid possible damage to your multimeter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before testing diodes

1. Rotate the rotary switch to . Press Select once to enter diode testing mode, will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the terminal.

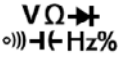
3 Connect the red test lead to the positive terminal (anode) of the diode and the black test lead to the negative terminal (cathode). The cathode of a diode is indicated with a band.

4 Read the diode forward bias. If the test lead connection is reversed, the multimeter will display "OL".

3.4 Testing for Continuity

CAUTION: To avoid possible damage to your multimeter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before testing for continuity.

1 Rotate the rotary switch to . Press Select twice to enter continuity testing mode, will be displayed.

2 Connect the black test lead to the **COM** terminal and the red test lead to the  terminal.

3 Probe the test points to measure the resistance in the circuit. If the reading is below 30 Ω, the multimeter will beep continuously.

3.5 Measuring Capacitance

CAUTION: To avoid possible damage to the multimeter or to the equipment under test, disconnect circuit power and discharge all high-voltage capacitors before measuring capacitance. Use the DC voltage function to confirm that the capacitor is fully discharged.

Capacitance ranges are 40.00 nF, 400.0 nF, 4.000 uF, 40.00 uF, 400.0 uF, 4000 uF.

Note: For the 4000 uF range, the measuring duration should be over 30 seconds.

1. Rotate the rotary switch to •))) ⊣⊢ / →| Ω. Press Select three times to enter capacitance measuring mode, the Farad units will be displayed.
2. Connect the black test lead to the **COM** terminal and the red test lead to the VΩ→| •))) ⊣⊢ Hz% terminal.
3. Probe the test points and read the display.

3.6 Measuring Frequency

Frequency ranges are 9.999 Hz, 99.99 Hz, 999.9 Hz, 9.999 kHz, 99.99 kHz, 999.9 kHz, and 9.999 MHz.

1. Rotate the rotary switch to Hz%.
2. Connect the black test lead to the **COM** terminal and the red test lead to the VΩ Hz% terminal.
3. Probe the test points and read the display.
4. Press Hz/Duty to switch between the frequency and duty cycle measurements.

When measuring AC voltage or AC current, press Hz/Duty to cycle through frequency measuring, duty cycle measuring, and original measuring.

3.7 Measuring Transistor

WARNING: To avoid electrical shock or damage to the instrument, do not apply more than 250 VDC or 250 VAC rms between the **COM** terminal and the **mATEMP µA hFE** terminal.

1. Rotate the rotary switch to hFE.
2. Connect the "**+**" plug of the multi-functional test socket to the **mATEMP µA hFE** terminal and the "**COM**" plug to the **COM** terminal).

3 Determine whether the transistor is NPN or PNP type and locate the Emitter, Base and Collector leads. Insert leads of the transistor into the corresponding holes of the multi-functional test socket.

4 Read the hFE value.

3.8 Measuring Temperature

1 Rotate the rotary switch to TEMP.

2 Connect the **red connection** of the K-type thermocouple to the mATEMP µA hFE terminal and the **black connection** to the COM terminal.

3 Probe the test points and read the display. Press Select to change the temperature units between °C or °F.

3.9 Measuring DC or AC Current

WARNING: Never attempt an in-circuit current measurement where the open-circuit potential to earth is greater than 250 V. Doing so will cause damage to the multimeter and possible electric shock or personal injury.

CAUTION: To avoid possible damage to the multimeter or to the equipment under test, check the multimeter's fuse before measuring current. Use the proper terminals, function, and range for your measurement. Never place the test leads in parallel with any circuit or component when the leads are plugged into the current terminals.

Current ranges are 600.0 μA, 6000 μA, 60.00 mA, 600.0 mA, 6.000 A, and 20.00 A.

1. Turn off the power of the measured circuit. Discharge all high- voltage capacitors.
2. Connect the black test lead to the **COM** terminal. For currents below 600 mA, connect the red test lead to the **mATEMP μA hFE** terminal; for currents within 600 mA – 20 A, connect the red test lead to the **20A** terminal.
3. Rotate the rotary switch to the appropriate position according to the measurement range, **μA≂**, **mA≂**, or **A≂**.
4. Disconnect the circuit path to be tested. Connect the black test lead to one side of the circuit (with a lower voltage); connect the red test lead to the other side (with a higher voltage). Reversing the leads will produce a negative reading, but will not damage the multimeter.
5. Select DC or AC measurement mode. Default is DC measurement mode, **DC** will be displayed. Press Select to switch into AC measurement mode, **AC** will be displayed.

6 Turn on the power of the measured circuit, and read the display. Press Range to enable and cycle through the manual ranges. If "OL" is displayed, it indicates the input exceeds the selected range and the rotary switch should be set to the position with higher range.

7 Turn off the power of the measured circuit and discharge all high-voltage capacitors. Remove the test leads and restore the circuit to the original condition.

4 Tools

4.1 Data Hold Mode

1. Press to freeze the display during measurement, H will be shown on the display.
2. Press again to exit this mode.

Note: This function is not available when measuring diodes and transistor.

4.2 Capturing Max. and Min. Values

In MAX mode, the measured maximum value will be held; In MIN mode, the measured minimum value will be held.

1. Press to cycle between the MAX mode and MIN mode.
2. Press for more than 2 seconds to exit the mode.

In this mode, the manual range mode will be activated automatically. Analog bar graph is not displayed. Auto power-off function is disabled.

Note: This function is not available when measuring diodes, capacitance, transistor, and frequency.

4.3 Making Relative Measurements

When making relative measurements, reading is the difference between a stored reference value and the input signal.

1. Press to enter the relative mode. The measurement value when pressing is stored as the reference value. In this mode, REL△ (current reading) = input value - reference value.
2. Press it again to exit the mode. In relative measurement, the manual range mode will be activated automatically. (The relative measurement should be carried out under a certain range, that is, this function is only available under the manual range mode.) Analog bar graph is not displayed.

Note: This function is not available when measuring diodes, transistor, and frequency.

4.4 Buzzer Feature

- Press the function key, the buzzer will sound "Be…" in short.
- One minute before Auto Power-off the buzzer will sound "beep" five times to warn. Before it is shut off, the buzzer will sound a long " beep" then shut off.
- The buzzer will sound "beep…" continuously to warn when the measured DC voltage is higher than 1000 V, AC voltage is higher than 750 V, or the measured DC/AC mV mode is higher than 600.0 mV.

- The buzzer will sound long when the short circuit resistance is less than about 30W during the continuity test.
- When the Bluetooth function is time out, the buzzer will sound "beep" two times.

5 Bluetooth Function (PD-351 and PD-352)

PD-351 and **PD-352** multimeter supports communications with Android based smart device through Bluetooth. You can use the free application software on the Android based smart devices to monitor the measurements, perform remote control, view trending graphs, etc. The recorded data can be saved as CSV file. More than one meters can be connect simultaneously.

Note: Bluetooth connectivity works over a range of about 10 meters. The work range is much longer in open-sided and non-occluded wide range environment, even up to 20 meters. If the Bluetooth function in the multimeter is idle for 10 minutes, the Bluetooth will be turned off automatically. Before turning off, the buzzer will sound "beep" two times.

5.1 System Requirements of Mobile Devices

- Android devices with Bluetooth connectivity 4.0.
- Android Versions: 4.4 and above.

5.2 Install the application software

Install the free PROMAX application software (Multimeter.apk), it can be downloaded from here:

- Scan QR Codes below with your Android based smart device to install the app.

- Visit www.promax.es/smartphone-apps/pd-35x to download APK file and install into the device.

Note: To allow the installation of this android application from a place other than the official website of Google "Play", on your mobile device go to "Settings" / "Security" and enable the "Unknown sources" option.

5.3 How to Connect

1. Turn on the multimeter, press and hold △/ until appear on the display.
2. Launch the application .
3. Click the icon on the top left of the screen to launch device connection.

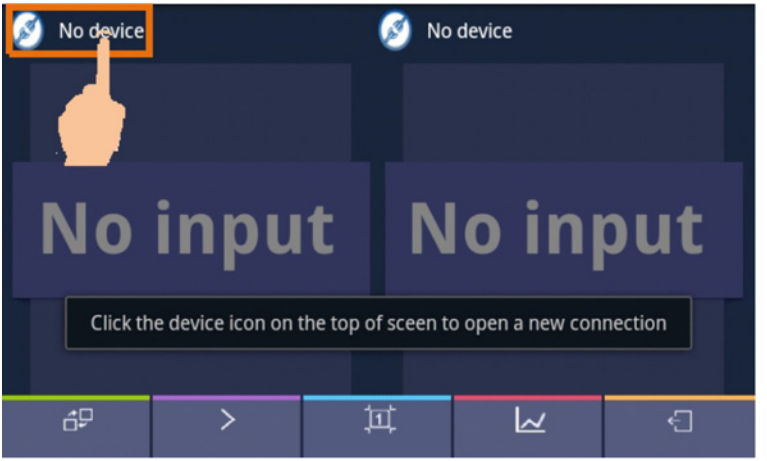


Figure 3.

4 If the Bluetooth function is activated, skip this step; if not, a dialog box (similar to figure below) will ask whether to turn on Bluetooth. Click "Yes".

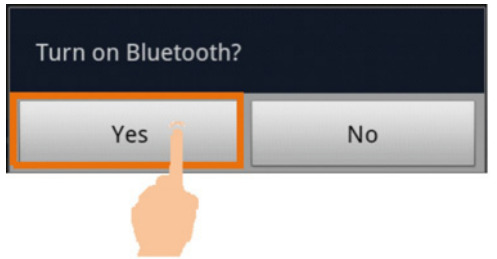


Figure 4.

5 Now, the blueetooh will try to detect the multimeter. Click to scan to try again.

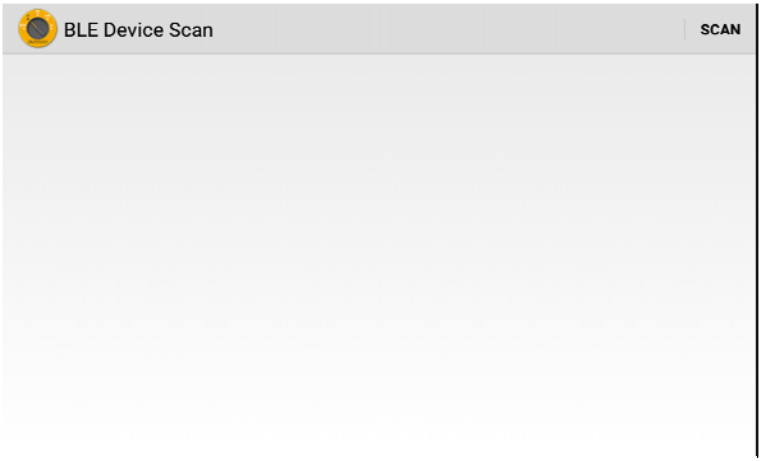


Figure 5.

6 In the list of devices should appear PD-351 or PD-352. Select the right one to pair. After pairing a confirmation message should appear on screen.

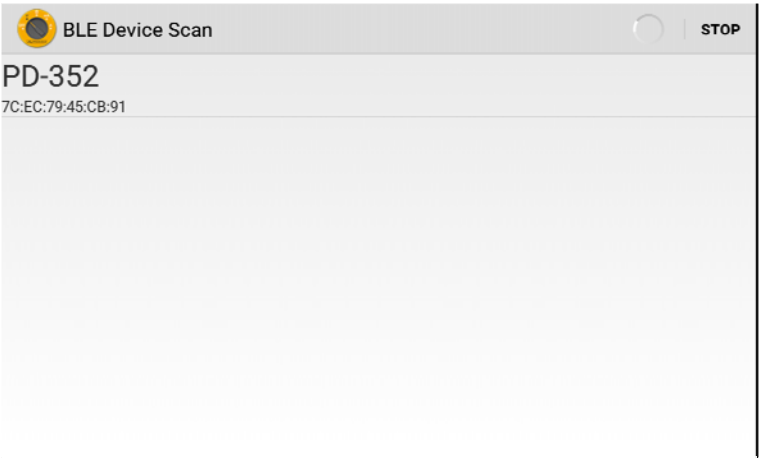


Figure 6.

7 You can repeat this procedure to connect the mobile device to a second multimeter, by clicking on "No device" on the top right of the screen and following the steps described above.

5.4 User Interface

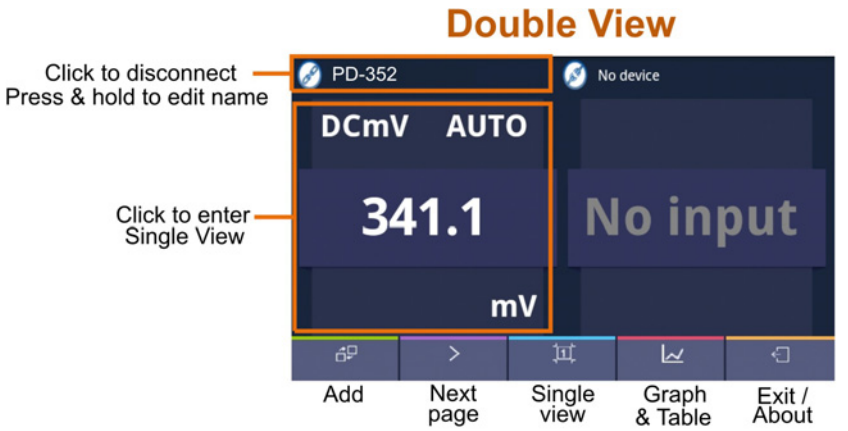


Figure 7.

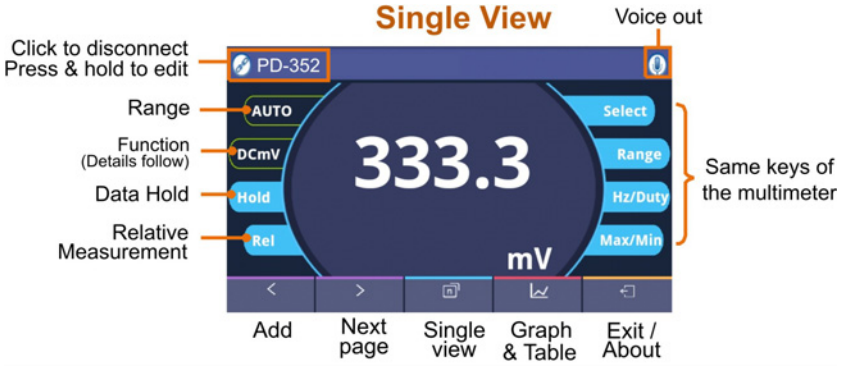


Figure 8.

Function Description Table

Display	Function
DC	Direct Current
AC	Alternating Current
RES	Measuring Resistance
DIO	Testing Diodes
BEEP	Testing for Continuity

Display	Function
CAP	Measuring Capacitance
Hz	Measuring Frequency
DUT	Measuring Duty Cycle
hFE	Measuring Transistor
TEMP	Measuring Temperature

6 Operations

- **Customize the meter name**

  The device name of meter can be customized. Press and hold the name on the top left of the scree, a dialog box below will pop up. You can input the customized name, this name will be memorized in the device. If this meter is connected to the same device next time, the customized name will be shown. If this meter is connected to another device, the name is still the default one or the customized name to the connected device.

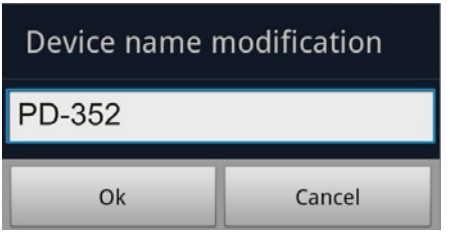


Figure 9.

- **Add meter**: In double view, click softkey.
- **Select meter**: In single or double view, click > or < softkey.
- **Disconnect meter**: In single or double view, click or the meter name.
- **Remote Control**: In single view, the control softkeys (blue background softkeys, as Hold, Rel, Select, etc.) can be short or long pressed to perform control, just as press the corresponding keys of multimeter.

- **Voice out function**

  Provide an audible out of the readings through the text-to-speech (TTS) engine on your Android device. Click the icon on the top right of the screen to turn on voice out. Click to turn off. In settings menu on your Android device, you can set the language-specific voice for the spoken text, or speech rate etc.

  You may change to different voices by installing different TTS engines.

- **About**: Click , and click "About", the following interface is shown.

Figure 10.

- **Data Graph and Table**: Click to view data graph and table. Click to show setting menu.

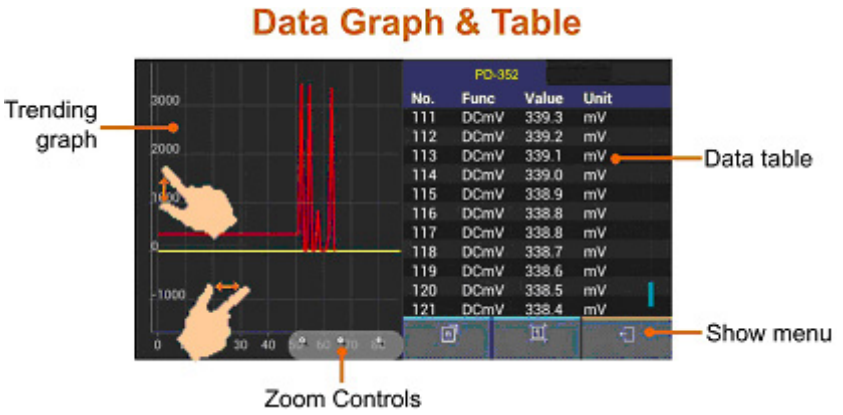


Figure 11.

- **Setting menu**

Softkey	Description
Open local file	Read the saved file (.CSV)
Save data	Save the displayed data into .CSV file
Share	Share the measurements via the installed sharing apps
Clear data	Clear the data displayed
Setting	**Sampling Interval**: Set the sampling interval in the application software. **Enable Period**: Log data within the defined period. **Record Period**: Define the period time if the period is enabled. **Fill**: Check to fill the area as blue below the data line.
Exit	Exit the APP

Note: In trending graph, you can pinch the screen to zoom. The Y axis (value) can be zoomed by gesturing along the up-down direction, and the X axis (time) can be zoomed by gesturing along the left-right direction.

7 Technical Specifications

All these specifications apply to the multimeter unless otherwise explanation.

Standard conditions: The environment temperature is 18 ºC to 28 ºC, the relative humidity is less than 80%.

Function		Measurement Range	Resolu-tion	Accuracy
DC Voltage (V)	mV	60.00 mV / 600.0 mV	0.01 mV	±(0.8%+2dig)
	V	60.00 mV / 600.0 mV / 6.000 V / 60.00 V	0.1 mV	
		600.0 V / 1000 V	0.1 V	
AC Voltage (V)	mV	60.00 mV / 600.0 mV	0.01 mV	±(0.8%+2dig)
	V	60.00 mV / 600.0 mV / 6.000 V / 60.00 V	1 mV	±(0.8%+2dig)
		600.0 V / 750 V	0.1 V	±(1%+3dig)
DC Current (A)	µA	600.0 µA	0.1 µA	±(0.8%+2dig)
	mA	600.0 µA / 6.000 mA / 60.00 mA / 600.0 mA / 6.000A	0.01 mA	±(0.8%+2dig)
	A	20.00 A [1]	1 mA	±(1.2%+3dig)
AC Current (A)	µA	600.0 µA	0.1 µA	±(1%+3dig)
	mA	600.0 µA / 6.000 mA / 60.00 mA / 600.0 mA / 6.000 A	0.01 mA	±(0.8%+2dig)
	A	20.00 A[1]	1 mA	±(2%+3dig)
Resistance (Ω)		600.0 Ω / 6.000 kΩ/ 60.00 kΩ / 600.0 kΩ/ 6.000 MΩ / 10.0 0 MΩ	0.1 Ω	±(0.8%+2dig)
		60.00 MΩ	0.01 MΩ	±(2%+3dig)

[1] When measuring current, for 10 A to 15 A, the measuring duration should not be over 2 minutes within 10 minutes, and in this 10 minutes, no other current should flow through except within the measuring duration; for 15 A to 20 A, the measuring duration should not be over 10 seconds within 15 minutes, and in this 15 minutes, no other current should flow through except within the measuring duration.

Function	Measurement Range	Resolu-tion	Accuracy
Capacitance (F)	40.00 nF	0.01 nF	±(2.5 %+3dig)
	400,0 nF / 4,000 µF/ 40,00 µF	0.1 nF	±(2.5 %+3dig)
	400.0 µF / 4000 µF[2]	0.1 µF	±(3 %+5dig)
Frequency[3] (Hz)	9,999 Hz / 99,99 Hz / 999,9 Hz / 9,999 kHz / 99,99 kHz / 999,9 kHz / 9,999 MHz	1 mHz	±(0.8 %+2dig)
Duty Cycle[4] (%)	0,1% - 99,9% (Typical: Vrms= 1 V, f=1 kHz)	0.1 %	±(1.2 %+3dig)
	0,1% - 99,9% (≥1 kHz)		±(2.5 %+3dig)
Temperature (°C/°F)	-50 °C to 400 °C	1 °C	±(2.5 %+3dig)
	-58 °F to 752 °F	1 °F	±(4.5 %+5dig)

[2] When measuring capacitance, for the 4000 uF range, the measuring duration should be over 30 seconds.

[3] When measuring frequency, the typical waveform is Square or Sine. The signal meets the following conditions.

Frequency	Amplitude (rms)
1 Hz – 4 MHz	100 mV
4 MHz – 8 MHz	≥200 mV
8 MHz – 10 MHz	≥300 mV

[4] When measuring duty cycle, the typical waveform is Square.

Display	6000	
Frequency Response (Hz)	PD-351	(40 - 400) Hz
	PD-352; PD-350	(40 – 10k) Hz
Sample rate for digital data	3 times/second	
Sample rate for analog bar graph	30 times/second	
Bluetooth	PD-351; PD-352	√
	PD-350	Without
Auto ranging	√	
True RMS	PD-352; PD-350	
Diodes Test	√	
Measuring Transistor	√	
Sleep Mode	√	
Continuity Test	√	
Low battery indication	√(The " " is displayed when the battery is under the proper operation range.)	
Data Hold	√	
Relative Measurement	√	
MAX/MIN Value	√	
LCD Backlight	√	
Analog bar graph	61 Segments	
Input Protection	√	
Input Impedance	10 MΩ	

Battery	3 V (1.5 V × 2) AA alkaline batteries
LCD Size	69 mm * 52 mm
Weight (without package)	0.32 kg
Dimension	85 mm * 185 mm * 30 mm
Working temperature	0 °C to 40 °C
Storage temperature	-10C o 60 °
Relative Humidity	≤ 80%
Altitude	Operating: 3,000 m Non-operating: 15,000 m

Note: Equipment specifications are set in these environmental operating conditions. Operation outside these specifications are also possible. Please check with us if you have specific requirements.

RECOMMENDATIONS ABOUT THE PACKING

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

8 Maintenance

8.1 Cleaning the multimeter

Wipe the case occasionally with a damp cloth. **DO NOT** use chemicals, cleaning solvents, abrasives or detergents.

8.2 Replacing the battery

WARNING: Disconnect all the test leads before initiating the fuse replacement process. Power off the instrument.

This meter is powered by a 6F22/LR22 or equivalent 9-volt battery.

When the multimeter displays the " " the battery must be replaced to maintain proper operation. Use the following procedure to replacing the battery:

1. Remove the holster.
2. Unscrew and remove the rear panel with the aid of a suitable Phillips screwdriver.
3. Remove the battery and replace it by a new one of 9V 6F22/LR22 type.
4. Back to placing the rear panel and screw it again.
5. Put the holster back in place.

8.3 Fuse replacement

WARNING: Disconnect all the test leads before initiating the fuse replacement process. Power off the instrument.

Fuses are located inside the instrument. In order to replace them you must follow these instructions:

1. Remove the holster
2. Unscrew and remove the rear panel using a Phillips suitable screwdriver.
3. Remove old fuses and replace them by the new ones.

Fuses must be:

1 A F250V

USING DIFFERENT TYPE OF FUSES COULD DAMAGE THE INSTRUMENT.

4. Back to placing the rear panel and screw it.
5. Put the holster back in place

PROMAX ELECTRONICA, S. L.

Francesc Moragas, 71-75
08907 L'HOSPITALET DE LLOBREGAT (Barcelona)
SPAIN
Tel. : 93 184 77 00 * Tel. Intl. : (+34) 93 184 77 02
Fax : 93 338 11 26 * Fax Intl. : (+34) 93 338 11 26
http://www.promaxelectronics.com
e-mail: promax@promaxelectronics.com